



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/597,777

08/07/2006

Titus Lanz

6107

60333

7590

10/03/2007

EDWIN D. SCHINDLER  
FIVE HIRSCH AVENUE  
P.O. BOX 966  
CORAM, NY 11727-0966

EXAMINER

VARGAS, DIXOMARA

ART UNIT

PAPER NUMBER

2859

MAIL DATE

DELIVERY MODE

10/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/597,777

Applicant(s)

LANZ ET AL.

Examiner

Dixomara Vargas

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-20, 25-29 and 32-35 is/are rejected.
- 7) ☒ Claim(s) 21-24, 30 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2859

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16-20, 26-27, 29 and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Leussler et al. (US 6,710,598 B2).

With respect to claim 16, Leussler discloses an imaging apparatus for nuclear magnetic resonance, comprising (Figures 1, 5 and 8): a plurality of coils assembled in a field array with each individual coil of said plurality of coils capable of transmitting or receiving, or both, frequency signals, each said individual coil including (Column 3, lines 51-64; Figures 1 and 5, coils #30 and #40 having individual conductor coils #311-#315 and #411-#415): a conductor path defining an area; and, an electrical conductor disposed in said area with said electrical conductor being arranged either within, or outside of (#390, #490 #310 and #350), said individual coil (#311-#315 and #411-#415) and completely surrounding said individual coil for forming a closed circuit (as seen on Figure 5), said electrical conductor not being a superconductor (Column 3, lines 51-64).

4. With respect to claim 17, Leussler discloses the apparatus wherein there are at least two said electrical conductors with a first electrical conductor being arranged within said individual coil (Figure 8, #310 and #350) and a second electrical conductor being arranged outside said electrical coil (#390).

5. With respect to claim 18, Leussler discloses the apparatus wherein said each individual coil or said electrical conductor has a spatial profile having a polygonal shape (Column 5, lines 24-37; as seen on Figure 8, individual coil element #32x having a polygonal shape).

Art Unit: 2859

6. With respect to claim 19, Leussler discloses the apparatus wherein said area is a plane (Column 4, lines 51-52).

7. With respect to claim 20, Leussler discloses the apparatus wherein said electrical conductor is arranged outside of each said individual coil and completely surrounds each said individual coil by an equidistance (#390).

8. With respect to claim 26, Leussler discloses the apparatus wherein each said individual coil includes a capacitance incorporated into said individual coil (Column 6, lines 20-36 and 43-48; Figure 8,  $C_{ix}$  and  $C_{ax}$ ).

9. With respect to claim 27, Leussler discloses the apparatus wherein said capacitance is arranged between said individual coil and said electrical conductor (Abstract; Figure 8,  $C_{ix}$ ).

10. With respect to claim 29, Leussler discloses the apparatus wherein each said electrical conductor includes a capacitance into said electrical conductor (Abstract; Figure 8,  $C_{ix}$ ).

11. With respect to claim 32, Leussler discloses the apparatus wherein each of said individual coil is able to be short-circuited via a switchable diode (Column 7, lines 33-63; Figure 13, D4 and D5).

12. With respect to claim 33, Leussler discloses the apparatus wherein said switchable diode is a PIN diode (Column 7, lines 33-63).

13. With respect to claim 34, Leussler discloses the apparatus wherein each said electrical conductor is able to be temporarily opened via a switch (Column 7, lines 59-63).

Art Unit: 2859

14. With respect to claim 35, Leussler discloses the apparatus wherein said switch is a switchable diode (Column 7, lines 33-63).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claim 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leussler et al. (US 6,710,598 B2) in view of Vaughan et al. (US 6,788,056 B2).

With respect to claim 25, Leussler disclose the claimed invention as stated above in paragraph 3 except for the apparatus wherein each said individual coil includes an inductance incorporated into said individual coil. However, Vaughan discloses an MR transmission coil system wherein each of said individual coil includes an inductance incorporated into said

individual coil (Column 3, lines 7-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a transmission coil wherein each of said individual coil includes an inductance incorporated into said individual coil as taught by Vaughan wit Leussler's imaging apparatus for nuclear magnetic resonance for the purpose of tuning the antenna or transmission coil to a desired frequency as taught by Vaughan (Column 3, lines 7-9).

18. With respect to claim 28, Leussler disclose the claimed invention as stated above in paragraph 3 except for the apparatus wherein each of said electrical conductor includes an inductance incorporated into said electrical conductor. However, Vaughan discloses an MR transmission coil system wherein each of said electrical conductor includes an inductance incorporated into said electrical conductor (Column 3, lines 7-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a transmission coil wherein each of said electrical conductor includes an inductance incorporated into said electrical conductor as taught by Vaughan wit Leussler's imaging apparatus for nuclear magnetic resonance for the purpose of tuning the antenna or transmission coil to a desired frequency as taught by Vaughan (Column 3, lines 7-9).

***Allowable Subject Matter***

19. Claims 21-24 and 30-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter:

- a. With respect to claim 21, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest an imaging apparatus for nuclear magnetic resonance, comprising each of said electrical conductor for each said individual coil forms a shielding and is arranged outside of each individual coil in combination with the remaining limitations of claim 16 above.
- b. With respect to claims 22-24, the claims have been found allowable due to its dependency on claim 21 above.
- c. With respect to claim 30, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest an imaging apparatus for nuclear magnetic resonance, comprising said electrical conductor, forming a shielding, extends perpendicularly beyond said area in, at least, one direction in combination with the remaining limitations of claim 16 above.
- d. With respect to claim 31, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest an imaging apparatus for nuclear magnetic resonance, comprising said electrical conductor forms a shielding that is earthed in combination with the remaining limitations of claim 16 above.

### ***Conclusion***

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited in the PTO 892 discloses MR systems with Rf antennas having inner and outer conductors.



Art Unit: 2859

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (571) 272-2252.

The examiner can normally be reached on Monday to Thursday from 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Dixomara Vargas  
Patent Examiner  
Art Unit 2859